INDEX TO AUTHORS

A

AKERS, W. W., BARNARD, A. C. L., BOURLAND, H. M., HUNT, W. A., TIMLAKE, W. P., and VARLEY, E. Numerical hydrodynamic calculations of catheter characteristics, 725
ALLEN, B. T. See NEBERT and ALLEN, 189
ANDERSON, E. C. See TOBEY, PETERSEN, ANDERSON, and PUCK, 567
ANNÉ, A. See ATTINGER, ANNÉ, and MCDONALD, 291
ATABEK, H. B., and LEW, H. S. Wave propagation through a viscous incompressible fluid contained in an initially stressed elastic tube, 481
ATTINGER, E. O., ANNÉ, A., and MCDONALD, D. A. Use of Fourier series for the analysis of biological systems, 291
AUSTIN, G. See LONGUET-HIGGINS and AUSTIN, 217

B

BARNARD, A. C. L., HUNT, W. A., TIMLAKE, W. P., and VARLEY, E. Peaking of the pressure pulse in fluid-filled tubes of spatially varying compliance, 735
——, ——, ——, and ——. A theory of fluid flow in compliant tubes, 717
——. See AKERS, BARNARD, BOURLAND, HUNT, TIMLAKE, and VARLEY 725
BERTRAND, G. L. See TING, BERTRAND, and SEARS, 813
BESCH, E. L. See SLUKA, SMITH, and BESCH, 175
BLAUROCK, A. E., and WORTHINGTON, C. R. Treatment of low angle X-ray data from planar and concentric multilayered structures, 305
BLAUSTEIN, M. P., and GOLDMAN, D. E. Origin of axon membrane hyperpolarization under sucrose-gap, 453
BLUM, J. J. See POLLOCK and BLUM, 19
BOURLAND, H. M. See AKERS, BARNARD, BOURLAND, HUNT, TIMLAKE, and VARLEY, 725
BRODY, S. S. See BROYDE and BRODY, 353
BROYDE, S. B., and BRODY, S. S. Spectral studies of a chlorophyll pigment with fluorescence maximum at 698 mμ, 353
BRUCE, W. R. See VALERIOTE, BRUCE, and MEEKER, 145
BURNS, VICTOR W. Regulation of pyrimidine biosynthesis and its strong coupling to the purine system, 787

C

CHALLICE, C. E., and CLARK, T. A. An attempt to infer the electrophysiological functions of some intracellular structures in cardiac cells by an electronic analogue, 87
CHANCE, BRITTON. See DEVAULT and CHANCE, 825
CLARK, JOHN, and PLONSEY, ROBERT. A mathematical evaluation of the core conductor model, 95
CLARK, T. A. See CHALLICE and CLARK, 87
CONTI, FRANCO, and EISENMAN, GEORGE. The steady-state properties of an ion exchange membrane with mobile sites, 227
COOLEY, J. W., and DODGE, F. A., JR. Digital computer solutions for excitation and propagation of the nerve impulse, 583

D

DETAR, DEDOS F. The calculation of parameters of the Moffitt equation for rotatory dispersion data, 505
DEVAULT, DON, and CHANCE, BRITTON. Studies of photosynthesis using a pulsed laser. I. Temperature dependence of cytochrome oxidation rate in *Chromatium*. Evidence for tunneling, 825
DEWEY, W. C., HUMPHREY, R. M., and SEDITA, B. A. Cell cycle kinetics and radiation-induced chromosomal aberrations studied with C^{14} and H^3 labels, 247
——, ——, and ——. Erratum: Cell cycle kinetics and radiation-induced chromosomal aberrations studied with C^{14} and H^3 labels, 693
DODGE, F. A., JR. See COOLEY and DODGE, 583

E

ECHIGO, AKIRA. See KOGA, ECHIGO, and NUNOMURA, 665
EHRENSTEIN, GERALD, and GILBERT, DANIEL L. Slow changes of potassium permeability in the squid giant axon, 553
EISENMAN, GEORGE. See CONTI and EISENMAN, 227
——. See WALKER and EISENMAN, 513
EPSTEIN, H. T. See HILL, EPSTEIN, and SCHIFF, 135
——. See HILL, SCHIFF, and EPSTEIN, 125, 373

F

FERNANDEZ, H. L. See HUNÆUS-COX, FERNANDEZ, and SMITH, 675

FIRTH, DAVID R. Interspike interval fluctuations in the crayfish stretch receptor, 201

G

GEISLER, C. DANIEL, and GOLDBERG, JAY M. A stochastic model of the repetitive activity of neurons, 53

GESELOWITZ, DAVID B. Comment on the core conductor model, 691

GHOSH, A. K., and GOVINDJEE. Transfer of the excitation energy in *Anacystis nidulans* grown to obtain different pigment ratios, 611

GILBERT, DANIEL L. See EHRENSTEIN and GILBERT, 553

GINOZA, HERBERT S. See PAINTER and GINOZA, 153

GOLDBERG, JAY M. See GEISLER and GOLDBERG, 53

GOLDMAN, D. E. See BLAUSTEIN and GOLDMAN, 453

GOVINDJEE. See GHOSH and GOVINDJEE, 611

GROVER, N. B. Anisometric transport of ions and particles in anisotropic tissue spaces, 71

H

HAHN, GEORGE M. State vector description of the proliferation of mammalian cells in tissue culture. I. Exponential growth, 275

HARSHAW, DAVID H. See SAWYER and HARSHAW, 653

HILL, HELENE Z., EPSTEIN, H. T., and SCHIFF, JEROME A. Studies of chloroplast development in *Euglena*. XIV. Sequential interactions of ultraviolet light and photoreactivating light in green colony formation, 135

——, SCHIFF, JEROME A., and EPSTEIN, H. T. Studies of chloroplast development in *Euglena*. XIII. Variation of ultraviolet sensitivity with extent of chloroplast development, 125

——, ——, and ——. Studies of chloroplast development in *Euglena*. XV. Factors influencing the decay of photoreactivability of green colony formation, 373

HIMMELFARB, ELLIOT. See SAWYER, HIMMELFARB, LUSTRIN, and ZISKIND, 641

TEN HOOPEN, M. Probabilistic firing of neurons considered as a first passage problem, 435

HORGAN, JAMES D. See JODAT, HORGAN, and LANGE, 773

HUMPHREY, R. M. See DEWEY, HUMPHREY, and SEDITA, 247, 693

HUNEEUS-COX, F., FERNANDEZ, H. L., and SMITH, B. H. Effects of redox and sulfhydryl reagents on the bioelectric properties of the giant axon of the squid, 675

HUNT, W. A. See AKERS, BARNARD, BOURLAND, HUNT, TIMLAKE, and VARLEY, 725

——. See BARNARD, HUNT, TIMLAKE, and VARLEY, 717, 735

HYMAN, EDWARD S. Some observations on the partition of Na^+ and K^+ into a lipid phase, 405

I

ILANI, ASHER. Interaction between cations in hydrophobic solvent-saturated filters containing fixed negative charges, 329

J

JODAT, RONALD W., HORGAN, JAMES D., and LANGE, RAMON L. Simulation of respiratory mechanics, 773

JUNGE, DOUGLAS, and MOORE, GEORGE P. Interspike interval fluctuations in *Aplysia* pacemaker neurons, 411

K

KOGA, SHOZO, ECHIGO, AKIRA, and NUNOMURA, KAZUKO. Physical properties of cell water in partially dried *Saccharomyces cerevisiae*, 665

KRAKAU, C. E. T. The diffraction pattern of dry blood smears, 801

KRIMM, S. See RAMACHANDRAN, VENKATACHALAM, and KRIMM, 849

L

LANGE, RAMON L. See JODAT, HORGAN, and LANGE, 773

LEIBO, STANLEY P., and MAZUR, PETER. Effect of osmotic shock and low salt concentration on survival and density of bacteriophages T4B and $T4B_{OI}$, 747

LEW, H. S. See ATABEK and LEW, 481

LONGUET-HIGGINS, H. C., and AUSTIN, G. The kinetics of osmotic transport through pores of molecular dimensions, 217

LUSTRIN, IRVING. See SAWYER, HIMMELFARB, LUSTRIN, and ZISKIND, 641

M

MAURO, ALEXANDER. The electrical conductance of semipermeable membranes, 371

MAZUR, PETER. See LEIBO and MAZUR, 747

MCDONALD, D. A. See ATTINGER, ANNÉ, and MCDONALD, 291

MCGRATH, R. A., WILLIAMS, R. W., and SWARTZENDRUBER, D. C. Breakdown of DNA in X-irradiated *Escherichia coli*, 113

MEEKER, B. E. See VALERIOTE, BRUCE, and MEEKER, 145

MOORE, GEORGE P. See JUNGE and MOORE, 411

N

NEBERT, D. W., and ALLEN, B. T. Environmental factors influencing the hyperfine structure of manganous low-temperature electron paramagnetic resonance spectra, 189
NOONEY, GROVE C. An erythron-dependent model of iron kinetics, 601
NUNOMURA, KAZUKO. See KOGA, ECHIGO, and NUNOMURA, 665

P

PAINTER, ROBERT B., and GINOZA, HERBERT S. Some characteristics of the resistance transfer factor (RTF) episome as determined by inactivation with tritium, P^{32}, and γ-radiation, 153
PAULY, H., and SCHWAN, H. P. Dielectric properties and ion mobility in erythrocytes, 621
PETERSEN, D. F. See TOBEY, PETERSEN, ANDERSON, and PUCK, 567
PLONSEY, ROBERT. Limitations on the equivalent cardiac generator, 163
——. See CLARK and PLONSEY, 95
POLLOCK, F., and BLUM, J. J. On the distribution of a permeable solute during Poiseuille flow in capillary tubes, 19
PROTHERO, JOHN W. Correlation between the distribution of amino acids and alpha helices, 367
PUCK, T. T. See TOBEY, PETERSEN, ANDERSON, and PUCK, 567

R

RAMACHANDRAN, G. N., VENKATACHALAM, C. M., and KRIMM, S. Stereochemical criteria for polypeptide and protein chain conformations. III. Helical and hydrogen-bonded polypeptide chains, 849
RIKMENSPOEL, ROBERT. Elastic properties of the sea urchin sperm flagellum, 471

S

SAITO, M., SCHWAN, H. P., and SCHWARZ, G. Response of nonspherical biological particles to alternating electric fields, 313
SAWYER, PHILIP N., and HARSHAW, DAVID H. Electroosmotic characteristics of canine aorta and vena cava wall, 653
——, HIMMELFARB, ELLIOT, LUSTRIN, IRVING, and ZISKIND, HOWARD. Measurement of streaming potentials of mammalian blood vessels, aorta and vena cava, in vivo, 641
SCHEUPLEIN, ROBERT J. Analysis of permeability data for the case of parallel diffusion pathways, 1
SCHIFF, JEROME A. See HILL, EPSTEIN, and SCHIFF, 135
——. See HILL, SCHIFF, and EPSTEIN, 125, 373
SCHWAN, H. P. See PAULY and SCHWAN, 621
——. See SAITO, SCHWAN, and SCHWARZ, 313
SCHWARZ, G. See SAITO, SCHWAN, and SCHWARZ, 313
SEARS, D. F. See TING, BERTRAND, and SEARS, 813
SEDITA, B. A. See DEWEY, HUMPHREY, and SEDITA, 247, 693
SLATER, D. W., and SPIEGELMAN, S. A chemical and physical characterization of echinoid RNA during early embryogenesis, 385
SLUKA, S. J., SMITH, A. H., and BESCH, E. L. Orientation in systems with asymmetric density distribution, 175
SMITH, A. H. See SLUKA, SMITH, and BESCH, 175
SMITH, B. H. See HUNEEUS-COX, FERNANDEZ, and SMITH, 675
SPIEGELMAN, S. See SLATER and SPIEGELMAN, 385
STEPHENSON, JOHN L. Concentration in renal counterflow systems, 539
SWARTZENDRUBER, D. C. See MCGRATH, WILLIAMS, and SWARTZENDRUBER, 113

T

TAYLOR, M. G. The input impedance of an assembly of randomly branching elastic tubes, 29
——. Wave transmission through and assembly of randomly branching tubes, 697
TIMLAKE, W. P. See AKERS, BARNARD, BOURLAND, HUNT, TIMLAKE, and VARLEY, 725
——. See BARNARD, HUNT, TIMLAKE, and VARLEY, 717, 735
TING, H. P., BERTRAND, G. L., and SEARS, D. F. Diffusion of salts across a butanol-water interface, 813
TOBEY, R. A., PETERSEN, D. F., ANDERSON, E. C., and PUCK, T. T. Life cycle analysis of mammalian cells. III. The inhibition of division in Chinese hamster cells by puromycin and actinomycin, 567

V

VALERIOTE, F. A., BRUCE, W. R., MEEKER, B. E. A model for the action of vinblastine in vivo, 145
VARLEY, E. See AKERS, BARNARD, BOURLAND, HUNT, TIMLAKE, and VARLEY, 725
——. See BARNARD, HUNT, TIMLAKE, and VARLEY, 717, 735
VENKATACHALAM, C. M. See RAMACHANDRAN, VENKATACHALAM, and KRIMM, 849

W

WALKER, JOHN L., JR., and EISENMAN, GEORGE. A test of the theory of the steady-state properties of an ion exchange membrane with mobile sites and dissociated counterions, 513

WEISS, CHARLES, JR. On the proposed energy switch in photosynthesis, 261

WILLIAMS, R. W. See MCGRATH, WILLIAMS, and SWARTZENDRUBER, 113

WORTHINGTON, C. R. See BLAUROCK and WORTHINGTON, 305

Z

ZABLOW, LEONARD. An equivalent cardiac generator which preserves topography, 535

ZISKIND, HOWARD. See SAWYER, HIMMELFARB, LUSTRIN, and ZISKIND, 641

INDEX TO SUBJECTS

A

Acid, deoxyribonucleic, breakdown in X-irradiated *Escherichia coli*, 113
——, ribonucleic, echinoid, chemical and physical characterization during early embryogenesis, 385
Acids, amino, and alpha helices, correlation between distribution of, 367
Actinomycin and puromycin, inhibition of division in Chinese hamster cells by, 567
Amino acids and alpha helices, correlation between distribution of, 367
Anacystis nidulans grown to obtain different pigment ratios, transfer of excitation energy in, 611
Analogue, electronic, attempt to infer electrophysiological functions of some intracellular structures in cardiac cells by, 87
Angle, low, X-ray data from planar and concentric multilayered structures, treatment of, 305
Anisometric transport of ions and particles in anisotropic tissue spaces, 71
Anisotropic tissue spaces, anisometric transport of ions and particles in, 71
Aorta and vena cava, in vivo measurement of streaming potentials, 641
—— and vena cava wall, canine, electroosmotic characteristics of, 653
Aplysia pacemaker neurons, interspike interval fluctuations, 411
Axon membrane hyperpolarization under sucrose-gap, origin of, 453
——, squid, giant, bioelectric properties, effects of redox and sulfhydryl agent on, 675
——, squid, giant, slow changes of potassium permeability in, 553

B

Bacteriophages T4B and T4B_{OL}, effect of osmotic shock and low salt concentration on survival and density of, 747
Bioelectric properties of squid giant axon, effects of redox and sulfhydryl reagents, 675
Biological particles, nonspherical, response to alternating electric fields, 313
—— systems, Fourier series used for analysis, 291
Biosynthesis, pyrimidine, regulation, and its strong coupling to purine system, 787
Blood smears, dry, diffraction pattern, 801
—— vessels, mammalian, aorta and vena cava, in vivo measurement of streaming potentials, 641
Branching elastic tubes, randomly, wave transmission through assembly of, 697
Butanol-water interface, diffusion of salts across, 813

C

Capillary tubes, distribution of permeable solute during Poiseuille flow in, 19
Carbon and hydrogen, radioactive, cell cycle kinetics and radiation-induced chromosomal aberrations studied with, 247, 693
Cardiac. *See* Heart.
Catheter characteristics, numerical hydrodynamic calculations of, 725
Cations in hydrophobic solvent-saturated filters containing fixed negative charges, interaction between, 329
Cell cycle kinetics and radiation-induced chromosomal aberrations studied with radioactive carbon and radioactive hydrogen labels, 247, 693
—— water in partially dried *Saccharomyces cerevisiae*, physical properties of, 665
Cells, cardiac, attempt to infer electrophysiological functions of some intracellular structures by electronic analogue, 87
——, mammalian, Chinese hamster, inhibition of division by puromycin and actinomycin, 567
——, mammalian, in tissue culture, proliferation, state vector description, exponential growth, 275
Chain conformations, polypeptide and protein, stereochemical criteria for, 849
Charges, fixed negative, interaction between cations in hydrophobic solvent-saturated filters containing, 329
Chemical and physical characterization of echinoid ribonucleic acid during early embryogenesis, 385
Chinese hamster cells, inhibition of division by puromycin and actinomycin, 567
Chlorophyll pigment with fluorescence maximum at 698 mμ, spectral studies, 353
Chloroplast development in *Euglena*, factors influencing decay of photoreactivability of green colony formation, 373

Chloroplast development in *Euglena*, sequential interactions of ultraviolet and photoreactivating light in green colony formation, 135
—— development in *Euglena*, variation of ultraviolet sensitivity with extent of, 125
Chromatium, temperature dependence of cytochrome oxidation rate in, evidence for tunneling, 825
Chromosomal aberrations, radiation-induced, and cell cycle kinetics, studied with C^{14} and H^3 labels, 247, 693
Colony formation, green, in *Euglena*, factors influencing decay of photoreactivability of, 373
—— formation, green, in *Euglena*, sequential interactions of ultraviolet and photoreactivating light in, 135
Computer, digital, solutions for excitation and propagation of nerve impulse, 583
Concentration in renal counterflow systems, 539
——, low salt, and osmotic shock, effect on survival and density of bacteriophages T4B and $T4B_{O_1}$, 747
Conductance, electrical, of semipermeable membranes, 371
Conductor model, core, comment, 691
—— model, core, mathematical evaluation, 95
Conformations, polypeptide and protein chain, stereochemical criteria for, 825
Core conductor model, comment, 691
—— conductor model, mathematical evaluation, 95
Crayfish stretch receptor, interspike interval fluctuations in, 201
Cultivation, tissue, mammalian cells in, proliferation, state vector description, exponential growth, 275
Cytochrome oxidation rate in *Chromatium*, temperature dependence of, evidence for tunneling, 825

D

Decay of photoreactivability of green colony formation in *Euglena*, factors influencing, 373
Density distribution, asymmetric, orientation in systems with, 175
—— and survival of bacteriophages T4B and $T4B_{O_1}$, effect of osmotic shock and low salt concentration on, 747
Deoxyribonucleic acid, breakdown in X-irradiated *Escherichia coli*, 113
Diffraction pattern of dry blood smears, 801
Diffusion of salts across butanol-water interface, 813
Diffusion pathways, parallel, analysis of permeability data for, 1
Digital computer solutions for excitation and propagation of nerve impulse, 583
Dispersion data, rotatory, calculation of Moffitt equation parameters for, 505
Distribution, density, asymmetric, orientation in systems with, 175
Dog aorta and vena cava wall, electroosmotic characteristics of, 653

E

Echinoid ribonucleic acid, chemical and physical characterization during early embryogenesis, 385
Elastic properties of sea urchin sperm flagellum, 471
—— tube, initially stressed, wave propagation through viscous incompressible fluid contained in, 481
—— tubes, randomly branching, assembly, input impedance, 29
—— tubes, randomly branching, wave transmission through assembly of, 697
Electric fields, alternating, response of nonspherical biological particles to, 313
—— properties and ion mobility in erythrocytes, 621
Electrical conductance of semipermeable membranes, 371
Electron paramagnetic resonance spectra, manganous low temperature, hyperfine structure, environmental factors influencing, 189
Electronic analogue, attempt to infer electrophysiological functions of some intracellular structures in cardiac cells by, 87
Electroosmotic characteristics of canine aorta and vena cava wall, 653
Electrophysiological functions of some intracellular structures in cardiac cells, attempt to infer by electronic analogue, 87
Embryogenesis, early, chemical and physical characterization of echinoid ribonucleic acid during, 385
Energy, excitation, in *Anacystis nidulans* grown to obtain different pigment ratios, transfer of, 611
—— switch, proposed, in photosynthesis, 261
Environmental factors influencing hyperfine structure of manganous low temperature electron paramagnetic resonance spectra, 189
Episome, resistance transfer factor, characteristics as determined by inactivation with tritium, P^{32}, and γ-radiation, 153
Equation parameters, Moffitt, calculation for rotatory dispersion data, 505

Erythrocytes, dielectric properties and ion mobility in, 621
Erythron-dependent model of iron kinetics, 601
Escherichia coli, X-irradiated, breakdown of deoxyribonucleic acid in, 113
Euglena, chloroplast development, factors influencing decay of photoreactivability of green colony formation, 373
——, chloroplast development, sequential interactions of ultraviolet and photoreactivating light in green colony formation, 135
——, chloroplast development, variation of ultraviolet sensitivity with extent of, 125
Exchange membrane, ion, with mobile sites and dissociated counterions, test of theory of steady-state properties of, 513
—— membrane, ion, with mobile sites, steady-state properties of, 227
Excitation energy in *Anacystis nidulans* grown to obtain different pigment ratios, transfer of, 611
—— and propagation of nerve impulse, digital computer solutions for, 583

F

Fields, electric, alternating, response of nonspherical biological particles to, 313
Filters, hydrophobic solvent-saturated, containing negative charges, interaction between cations in, 329
Firing of neurons, probabilistic, considered as first passage problem, 435
Flagellum, sperm, sea urchin, elastic properties, 471
Flow, fluid, in compliant tubes, theory, 717
——, Poiseuille, in capillary tubes, distribution of permeable solute during, 19
Fluid flow in compliant tubes, theory, 717
——, viscous incompressible, contained in initially stressed elastic tube, wave propagation through, 481
Fluid-filled tubes of spatially varying compliance, peaking of pressure pulse in, 735
Fluorescence maximum at 698 mμ, spectral studies of chlorophyll pigment with, 353
Fourier series used for analysis of biological systems, 291

G

Generator, cardiac, equivalent, limitations on, 163
——, cardiac, equivalent, preserving topography, 535
Growth, exponential, state vector description of proliferation of mammalian cells in tissue culture, 275
——, transfer of excitation energy in *Anacystis nidulans* grown to obtain different pigment ratios, 611

H

Hamster cells, Chinese, inhibition of division by puromycin and actinomycin, 567
Heart cells, attempt to infer electrophysiological functions of some intracellular structures by electronic analogue, 87
—— generator, equivalent, limitations on, 163
—— generator, equivalent preserving topography, 535
Helical and hydrogen-bonded polypeptide chains, stereochemical criteria for conformations, 849
Helices, alpha, and amino acids, correlation between distribution of, 367
Hydrodynamic calculations, numerical, of catheter characteristics, 725
Hydrogen and carbon, radioactive, cell cycle kinetics and radiation-induced chromosomal aberrations studied with, 247, 693
Hydrogen-bonded and helical polypeptide chains, stereochemical criteria for conformations, 849
Hydrophobic solvent-saturated filters containing fixed negative charges, interaction between cations in, 329
Hyperpolarization, axon membrane, under sucrose-gap, origin of, 453

I

Impedance, input, of assembly of randomly branching elastic tubes, 29
Impulse, nerve, digital computer solutions for excitation and propagation of, 583
Inhibition of division in Chinese hamster cells by puromycin and actinomycin, 567
Interface, butanol-water, diffusion of salts across, 813
Ion exchange membrane with mobile sites and dissociated counterions, test of theory of steady-state properties of, 513
—— exchange membrane with mobile sites, steady-state properties of, 227
—— mobility and dielectric properties in erythrocytes, 621
——, sodium and potassium, partition into lipid phase, 405
Ions and particles, anisometric transport in anisotropic tissue spaces, 71
Iron kinetics, erythron-dependent model of, 601
Irradiation, X-, *Escherichia coli*, breakdown of deoxyribonucleic acid in, 113

K

Kidney counterflow systems, concentration in, 539

Kinetics, cell cycle, and radiation-induced chromosomal aberrations studied with C^{14} and H^3 labels, 247, 693
——, iron, erythron-dependent model of, 601
—— of osmotic transport through pores of molecular dimensions, 217

L

Labels, radioactive carbon and radioactive hydrogen, cell cycle kinetics and radiation-induced chromosomal aberrations studied with, 247, 693
Laser, pulsed, photosynthesis studied with, temperature dependence of cytochrome oxidation rate in *Chromatium*, evidence for tunneling, 825
Letters to the Editor, 367, 371, 535, 691, 693
Life cycle analysis of mammalian cells, inhibition of division in Chinese hamster cells by puromycin and actinomycin, 567
Light, ultraviolet and photoreactivating sequential interactions in green colony formation in *Euglena*, 135
Lipid phase, partition of sodium ion and potassium ion into, 405

M

Mammalian blood vessels, aorta and vena cava, in vivo measurement of streaming potentials, 641
—— cells, Chinese hamster, inhibition of division by puromycin and actinomycin, 567
—— cells in tissue culture, proliferation, state vector description, exponential growth, 275
Manganous low temperature electron paramagnetic resonance spectra, hyperfine structure, environmental factors influencing, 189
Mathematical evaluation of core conductor model, 95
Mechanics, respiratory, simulation of, 773
Membrane hyperpolarization, axon, under sucrose-gap, origin of, 453
——, ion exchange, with mobile sites and dissociated counterions, test of theory of steady-state properties of, 513
——, ion exchange, with mobile sites, steady-state properties of, 227
Membranes, semipermeable, electrical conductance of, 371
Model, core conductor, comment, 691
——, core conductor, mathematical evaluation, 95
——, erythron-dependent, of iron kinetics, 601
—— for action of vinblastine in vivo, 145
——, stochastic, of repetitive activity of neurons, 53
Moffitt equation parameters, calculation for rotatory dispersion data, 505
Molecular dimensions, pores of, kinetics of osmotic transport through, 217

N

Nerve impulse, digital computer solutions for excitation and propagation of, 583
Neurons, pacemaker, *Aplysia*, interspike interval fluctuation in, 411
——, probabilistic firing considered as first passage problem, 435
——, repetitive activity, stochastic model, 53
Nucleic acid, deoxyribo-, breakdown in X-irradiated *Escherichia coli*, 113
—— acid, ribo-, echinoid, chemical and physical characterization during early embryogenesis, 385

O

Orientation in systems with asymmetric density distribution, 175
Osmotic, electro-, characteristics of canine aorta and vena cava wall, 653
—— shock and low salt concentration, effect on survival and density of bacteriophages T4B and $T4B_{OI}$, 747
—— transport through pores of molecular dimensions, kinetics, 217
Oxidation rate, cytochrome, in *Chromatium*, temperature dependence of, evidence for tunneling, 825
—— and reduction and sulfhydryl reagents, effects on bioelectric properties of squid giant axon, 675

P

Pacemaker neurons, *Aplysia*, interspike interval fluctuations in, 411
Paramagnetic resonance spectra, electron, manganous low temperature, hyperfine structure, environmental factors influencing, 189
Parameters of Moffitt equation, calculation for rotatory dispersion data, 505
Particles, biological, nonspherical, response to alternating electric fields, 313
—— and ions, anisometric transport in anisotropic tissue spaces, 71
Partition of sodium ion and potassium ion into lipid phase, 405
Permeability data for case of parallel diffusion pathways, analysis, 1
——, potassium, in squid giant axon, slow changes of, 553
——, semipermeable membranes, electrical conductance of, 371

Permeable solute, distribution during Poiseuille flow in capillary tubes, 19
Phase, lipid, partition of sodium ion and potassium ion into, 405
Phosphorus, radioactive, tritium, and γ-radiation, some characteristics of resistance transfer factor episome as determined by inactivation with, 153
Photoreactivability of green colony formation in *Euglena*, factors influencing decay of, 373
Photoreactivating and ultraviolet light, sequential interactions in green colony formation in *Euglena*, 135
Photosynthesis, proposed energy switch in, 261
—— studied using a pulsed laser, temperature dependence of cytochrome oxidation rate in *Chromatium*, evidence for tunneling, 825
Physical and chemical characterization of echinoid ribonucleic acid during early embryogenesis, 385
—— properties of cell water in partially dried *Saccharomyces cerevisiae*, 665
Physiological, electro-, functions of some intracellular structures in cardiac cells, attempt to infer by electronic analogue, 87
Pigment, chlorophyll, with fluorescence maximum at 698 mμ, spectral studies, 353
—— ratios, different, transfer of excitation energy in *Anacystis nidulans* grown to obtain, 611
Poiseuille flow in capillary tubes, distribution of permeable solute during, 19
Polypeptide and protein chain conformations, helical and hydrogen-bonded polypeptide chains, stereochemical criteria for, 849
Pores of molecular dimensions, kinetics of osmotic transport through, 217
Potassium ion and sodium ion, partition into lipid phase, 405
—— permeability in squid giant axon, slow changes of, 553
Potentials, streaming, of mammalian blood vessels, aorta and vena cava, in vivo measurement, 641
Pressure pulse in fluid-filled tubes of spatially varying compliance, peaking of, 735
Probabilistic firing of neurons considered as first passage problem, 435
Propagation and excitation of nerve impulse, digital computer solutions for, 583
Protein and polypeptide chain conformations, helical and hydrogen-bonded polypeptide chains, stereochemical criteria for, 849
Purine system, regulation of pyrimidine biosynthesis and its strong coupling to, 787
Puromycin and actinomycin, inhibition of division in Chinese hamster cells by, 567
Pyrimidine biosynthesis, regulation, and its strong coupling to purine systems, 787

R

Radiation, γ-, tritium, and P^{32}, some characteristics of resistance transfer factor episome as determined by inactivation with, 153
Radiation-induced chromosomal aberrations and cell cycle kinetics studied with C^{14} and H^3. 247, 693
Radioactive carbon and hydrogen, cell cycle kinetics and radiation-induced chromosomal aberrations studied with, 247, 693
—— phosphorus, tritium, and γ- radiation, some characteristics of resistance transfer factor episome as determined by inactivation with, 153
Reagents, redox and sulfhydryl, effects on bioelectric properties of squid giant axon, 675
Receptor, stretch, crayfish, interspike interval fluctuations in, 201
Redox. *See* Oxidation *and* Reduction.
Reduction and oxidation and sulfhydryl reagents, effects on bioelectric properties of squid giant axon, 675
Renal. *See* Kidney.
Repetitive activity of neurons, stochastic model, 53
Resistance transfer factor episome, characteristics as determined by inactivation with tritium, P^{32}, and γ-radiation, 153
Resonance spectra, paramagnetic, electron, manganous low temperature, hyperfine structure, environmental factors influencing, 189
Respiratory mechanics, simulation of, 773
Ribonucleic acid, deoxy-, breakdown in X-irradiated *Escherichia coli*, 113
——, echinoid, chemical and physical characterization during early embryogenesis, 385
Roentgen ray data, low angle, from planar and concentric multilayered structures, treatment, 305
Rotatory dispersion data, calculation of Moffitt equation parameters for, 505

S

Saccharomyces cerevisiae, partially dried, physical properties of cell water in, 665
Salt concentration, low, and osmotic shock, effect on survival and density of bacteriophages T4B and $T4B_{0_1}$, 747
Salts, diffusion across butanol-water interface, 813
Sea urchin sperm flagellum, elastic properties, 471
Sensitivity, ultraviolet, variation with extent of chloroplast development in *Euglena*, 125
Shock, osmotic, and low salt concentration, effect on survival and density of bacteriophages T4B and $T4B_{0_1}$, 747
Smears, blood, dry, diffraction pattern, 801

Sodium ion and potassium ion, partition into lipid phase, 405
Solute, permeable, distribution during Poiseuille flow in capillary tubes, 19
Solutions, digital computer, for excitation and propagation of nerve impulse, 583
Solvent-saturated filters, hydrophobic, containing fixed negative charges, interaction between cations in, 329
Spectra, resonance, paramagnetic, electron, manganous low temperature, hyperfine structure, environmental factors influencing, 189
Spectral studies of chlorophyll pigment with fluorescence maximum at 698 mμ, 353
Sperm flagellum, sea urchin, elastic properties, 471
Spherical, non-, biological particles, response to alternating electric fields, 313
Squid giant axon, bioelectric properties, effects of redox and sulfhydryl reagents on, 675
—— giant axon, slow changes of potassium permeability in, 553
Steady-state properties of ion exchange membrane with mobile sites, 227
—— properties of ion exchange membrane with mobile sites and dissociated counterions, test of theory, 513
Stereochemical criteria for polypeptide and protein chain conformations, helical and hydrogen-bonded polypeptide chains, 849
Stochastic model of repetitive activity of neurons, 53
Stress, wave propagation through viscous incompressible fluid contained in initially stressed elastic tube, 481
Stretch receptor, crayfish, interspike interval fluctuations in, 201
Sucrose-gap, origin of axon membrane hyperpolarization under, 453
Sulfhydryl and redox reagents, effects on bioelectric properties of squid giant axon, 675

T

Temperature dependence of cytochrome oxidation rate in *Chromatium*, evidence for tunneling, 825
——, low, electron paramagnetic resonance spectra, manganous, hyperfine structure, environmental factors influencing, 189
Tissue culture, mammalian cells in, proliferation, state vector description, exponential growth, 275
—— spaces, anisotropic, anisometric transport of ions and particles in, 71
Topography, equivalent cardiac generator which preserves, 535
Transfer of excitation energy in *Anacystis nidulans* grown to obtain different pigment ratios, 611
Transmission, wave, through assembly of randomly branching elastic tubes, 697
Transport, anisometric, of ions and particles in anisotropic tissue spaces, 71
——, osmotic, through pores of molecular dimensions, kinetics, 217
Tritium, P^{32}, and γ-radiation, some characteristics of resistance transfer factor episome as determined by inactivation with, 153
Tubes, compliant, theory of fluid flow in, 717
——, elastic, randomly branching, wave transmission through assembly of, 697
——, fluid-filled, of spatially varying compliance, peaking of pressure pulse in, 735
Tunneling, evidence for in temperature dependence of cytochrome oxidation in *Chromatium*, 825

U

Ultraviolet and photoreactivating light, sequential interactions in green colony formation in *Euglena*, 135
—— sensitivity, variation with extent of chloroplast development in *Euglena*, 125

V

Vector description, state, of proliferation of mammalian cells in tissue culture, exponential growth, 275
Vena cava and aorta, in vivo measurement of streaming potentials, 641
—— cava and aorta wall, canine, electroosmotic characteristics of, 653
Vinblastine, model for action in vivo, 145
Viscous incompressible fluid contained in initially stressed elastic tube, wave propagation through, 481

W

Water, cell, in partially dried *Saccharomyces cerevisiae*, physical properties of, 665
Water-butanol interface, diffusion of salts across, 813
Wave propagation through viscous incompressible fluid contained in initially stressed elastic tube, 481
—— transmission through assembly of randomly branching elastic tubes, 697

X

X-ray. *See* Roentgen ray.